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Institute of Computer Applications

Name of Program: BCA + MCA

SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			End Sem University Exam	Two Term Exam	Teachers Assessment*	End Sem University Exam	Teachers Assessment*				
BCCA401	COMPULSORY	Computer Networks	60	20	20	0	0	4	1	0	5

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit; Q/A – Quiz/Assignment/Attendance, MST - Mid Sem Test.

***Teacher Assessment** shall be based on following components: Quiz/Assignment/Project/Participation in class (Given that no component shall be exceed 10 Marks)

Course Educational Objectives (CEOs):

- To provide an introduction to the fundamental concepts on data communication and the design of computer networks.
- To get familiarized with the basic protocols of computer networks.

Course Outcomes (COs): After the successful completion of this course students will be able to

- Identify the different components in a Communication System and their respective roles.
- Describe the technical issues related to the local Area Networks
- Identify the common technologies available in establishing LAN infrastructure.

UNIT-I

Introduction: Computer Network, Data communication, Network Topologies, Layered Network Architecture-Review of ISO-OSI Model., Transmission Media: Guided and unguided.

UNIT-II

Data Security and Integrity: Parity Checking Code, Cyclic redundancy checks (CRC), Hemming Code, Flow and error control, Go-Back-N protocol, sliding window protocol. Contention Protocol-, Stop-Go-Access Protocol.

UNIT-III

Data Link Layer: Simplex, Half duplex and Full duplex, Inter Networking, Layer 1 connections-Repeater, Hubs, Layer 2 connections-Bridges, Switches, Layer 3 connections-Routers, Gateways.

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UNIT-IV

Wide Area Network: Introduction, Network routing, least cost routing algorithms, Dijkstra's algorithm, Internetworking.

UNIT-V

Transport and upper layers in OSI Model: Transport layer functions, Network Security, email, Multimedia.

References

1. A.S.Tanenbaum, "Computer Network", 4thaddition,PHI
2. Forouzan "Data Communication and Networking 3ed", TMH
3. J.F.Hayes, "Moduling and Analysis of Computer Communication Networks", Plenum Press
4. D.E.Comer, "Internetworking with TCP/IP", Volume Ist&IInd, PHI
5. Willium Stalling, "Data & Computer communications",Maxwell Macmillan International Ed.
6. D.Bertsekas and R.Gallager,"Data Networks", 2ndEd. ,PHI.
7. G.E. Keiser ,"Local Area Networks ", McGraw Hill, International Ed.

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SUBJECT CODE	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
		THEORY			PRACTICAL		Th	T	P	CREDITS
		END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BCCA 402	Accounting and Financial Management	60	20	20	0	0	3	1	0	4

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
***Teacher Assessment** shall be based on following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Objectives

- The objective of this course is to understand the concept of Business Finance and Accounting
- It also aims at learning of financial tools and developing the skills of financial analysis and financial decisions.

Course Outcomes

- Familiarized with the various sources of finance which a business house can mobilize.
- Develop the ability to measure the risk and return of the various portfolios.
- Implement investment decisions, the process and methods of evaluation of various investment proposals.

UNIT 1 Basic knowledge of Accounting

Basic Accounting Concepts and Fundamental Conventions
Concept of Double Entry System
Basic knowledge of Accounting Process: Journal, Ledger
Trial Balance
Introduction to Profit and Loss Account and Balance Sheet

UNIT 2 Depreciation

Depreciation and its importance in Decision Making
Straight Line Method
Written Down Value Method
Bank Reconciliation

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UNIT 3 Management Accounting

Basic Management Accounting Concepts
Relationship with Financial Accounting and Cost Accounting
Break Even Analysis
Introduction to financial management
Objectives of financial management
Profit maximization and wealth maximization
Interface of Financial Management with other functional areas

UNIT 4 Introduction to Financial Management

Concept of Leverage in Finance
Computation and Inferences of Degree of Operating Leverage
Financial Leverage
Combined Leverage

UNIT 5 Short term and long term sources of funds

Short term and long term sources of funds and their characteristics
Dividend policy – Factors affecting the dividend policy
Dividend policies- Stable dividend
Factors influencing working capital requirements

References

1. P.C. Tulsian, Financial Accounting, Pearson, 2008
2. S.N. Maheshwari, Introduction to Accountancy, New Delhi, Vikas Publishing House, 10th Edition, 2009
3. Hansen, Management Accounting, 7th edition CengageLearning,India
4. N. Ramchandran and RamkumarKakani, Financial Accounting for Management, New Delhi, Tata-Mac Graw-Hill, 2nd Edition, 2008.
5. Paresh Shah, Basic Financial Accounting for Management, New Delhi, Oxford University
6. Khan M. Y. and Jain P. K. (2007). Financial Management. Tata McGraw Hill, Latest Edition.
7. Pandey I. M. (2009). Financial Management. Vikas Publications, Latest Edition.
8. Chandra Prasanna (2011). Financial Management. Tata McGraw Hill, Latest Edition.
9. Kapil (2012). Financial Management. Pearson Education, Latest Edition.
10. Shrivastav and Mishra (2008). Financial Management. Oxford University press, Latest Edition.

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			THEORY			PRACTICAL		L	T	P	CREDITS
			End Sem University Exam	Two Term Exam	Teachers Assessment*	End Sem University Exam	Teachers Assessment*				
BCCA403	COMPULSORY	Basics of Computer Graphics and Multimedia Concepts	60	20	20	0	0	4	1	0	5

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit; Q/A – Quiz/Assignment/Attendance, MST - Mid Sem Test.

***Teacher Assessment** shall be based on following components: Quiz/Assignment/Project/Participation in class (Given that no component shall be exceed 10 Marks)

Course Educational Objectives (CEOs):

- To provide knowledge about hardware and software used in computer Graphics.
- To impart knowledge about drawing algorithms.
- To provide detailed knowledge about color and intensity levels.
- To acquaint students with windowing and clipping.
- To make the student understanding about Multimedia tools used in graphics.

Course Outcomes (Cos):

- An ability to understand basic knowledge of Computer Graphics.
- An ability to apply knowledge of Computer Graphics.
- An ability to understand the color and intensity levels.
- An ability to identify visible area of any surface.
- An ability to understand Multimedia.

UNIT - I

Devices: Display devices: Random scan and raster scan monitors. Color CRT monitor, Plasmapanel, Hard copy devices: Printers and Plotter: Input devices Joysticks, Mouse, Digitizer,Scanner, Camera.

UNIT - II

Introduction to Computer Graphics, Pixel, color and intensity, Types of refresh graphics displays, CRT Raster Scan Basics, Video Basics, Interactive input and output Devices, Raster scan graphics, Line drawing algorithms, Bresenham's algorithm, Scan Conversion.

UNIT - III

Clipping- 2D clipping, line clipping algorithms, Cyrus-Beck algorithm, convex polygon & inward normal, concave clipping, Introduction of 3D clipping, character clipping.

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Hidden line and Hidden surface algorithms- Floating horizon, Roberts algorithm, Warnock algorithm, Weiler-Atherton Subdivision algorithm.

UNIT - IV

Rendering, Illumination model, surface normal, reflection vector, shading, transparency, shadows, texture, colour.

UNIT V

Introduction to multimedia, multimedia components, multimedia hardware, SCSI, IDE, MCI, Multimediadata and file formats, RTF, TIFF, MIDI, JPEG, DIB, MPEG.

Reference

1. D.Hearn and M.P. Baker “Computer Graphics” (2nd ed), PHI.
2. S. Harrington – “Computer Graphics - a Programming approach” (2nd ed) McGrawhill.
3. New Mann &Sprovl- “Principles of interactive computer graphics” (2nd ed) McGrawhill.
4. Roger S. David “Procedural Elements for Computer Graphics”, McGraw Hill.
5. Roger S David “Mathematical Elements for Computer Graphics”, McGraw Hill.
6. Foley &Vandan “Computer Graphics Principles & Practice in “C” “AddisionWesly.
7. TayVaugham“MultimediaMaking it Work” 5th Ed. 2001, Tata McGraw Hill.
8. Prabhat K. Andleigh&Kiran Thakur “Multimedia System Design”, PHI
9. Drew, “Fundamentals of Multimedia”, Pearsons.
10. Nigel Chapman, J. Chapman “Digital Multimedia” Wiley India.

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			THEORY			PRACTICAL		L	T	P	CREDITS
			End Sem University Exam	Two Term Exam	Teachers Assessment*	End Sem University Exam	Teachers Assessment*				
ML301	Com-pulsory	**Environment and Energy Studies**	60	20	20	0	0	4	0	0	4

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit; Q/A – Quiz/Assignment/Attendance, MST - Mid Sem Test.

***Teacher Assessment** shall be based on following components: Quiz/Assignment/Project/Participation in class (Given that no component shall be exceed 10 Marks)

Course Educational Objectives (CEOs):

- To understand sources of information required for addressing environmental challenges
- To identify a suite of contemporary tools and techniques in environmental informatics
- To apply literacy, numeracy and critical thinking skills to environmental problem-solving

Course Outcomes (Cos): The students should be able to:

- Apply the principles of ecology and environmental issues that apply to air, land and water issues on a global scale.
- Develop critical thinking and/or observation skills, and apply them to the analysis of a problem or question related to the environment.
- Demonstrate ecology knowledge of a complex relationship between predators, prey, and the plant community.

Unit I

Environmental Pollution and Control Technologies: Environmental Pollution & Control: Classification of pollution, Air Pollution: Primary and secondary pollutants, Automobile and industrial pollution, Ambient air quality standards. Water pollution: Sources and types, Impacts of modern agriculture, degradation of soil. Noise Pollution: Sources and Health hazards, standards, Solid Waste management composition and characteristics of e - Waste and its management. Pollution control technologies: Wastewater Treatment methods: Primary, Secondary and Tertiary.

Unit II

Natural Resources: Classification of Resources: Living and Non - Living resources, water resources: use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problem, Mineral resources: use and exploitation, environmental effects of extracting and using mineral resouces, Land resources: Forest resources, Energy resources: growing energy needs, renewable energy source, case studies..

Unit III

Ecosystems: Definition, Scope and Importance ecosystem. Classification, Structure and function of an ecosystem, Food chains, food webs and ecological pyramids. Energy flow in the ecosystem, Biogeochemical cycles, Bioaccumulation, ecosystem value, devices and carrying capacity, Field visits.

Unit IV

Biodiversity and its Conservation: Introduction - Definition: genetic, species and ecosystem diversity. Bio-geographical classification of India - Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values - . Biodiversity at global, National and local levels. - . India as a megadiversity nation - Hot-sports of biodiversity - Threats to biodiversity: habitat loss, poaching of wildlife, manwildlife conflicts; Conservation of biodiversity: In-situ and Exsitu conservation. National biodiversity act.

Unit V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act-1981, Water Act, Forest Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan(EMP)

Suggested Readings:

1. Agarwal, K.C.,(latest edition).**Environmental Biology**, Bikaner :Nidi Pub. Ltd.,
2. Brunner R.C.(latest edition) **Hazardous Waste Incineration**, McGraw Hill Inc.
3. Clank R.S. .,(latest edition. **Marine Pollution**, Clanderson Press Oxford (TB).
4. **Environmental Encyclopedia**, Jaico Pub. Mumbai,
5. De A.K(latest edition) **Environmental Chemistry**, Wiley Wastern Ltd.
6. ErachBharucha(2005).**Environmental Studies for Undergraduate Courses** by for University Grants Commission.
7. R. Rajagopalan(2006).**Environmental Studies**. Oxford University Press.
8. M. AnjiReddy(2006).**Textbook of Environmental Sciences and Technology**. BS Publication.
9. Richard T. Wright(2008).**Enviromental Science: towards a sustainable future** PHL Learning Private Ltd. New Delhi.
10. Gilbert M. Masters and Wendell P. Ela .(2008).**Environmental Engineering and science**. PHI Learning Pvt Ltd.

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Information Technology & Computer Applications)
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11. Daniel B. Botkin& Edwards A. Keller(2008).**Environmental Science** Wiley INDIA edition.
12. AnubhaKaushik(2009).**EnviromentalStudies**. New age international publishers.

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SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			End Sem University Exam	Two Term Exam	Teachers Assessment*	End Sem University Exam	Teachers Assessment*				
BCCA405	Com-pulso-ry	**System Analysis & Design**	60	20	20	0	0	3	1	0	4

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit; Q/A – Quiz/Assignment/Attendance, MST - Mid Sem Test.

***Teacher Assessment** shall be based on following components: Quiz/Assignment/Project/Participation in class (Given that no component shall be exceed 10 Marks)

Course Educational Objectives (CEOs):

- To introduce established and evolving methodologies for the analysis, design,and development of an information system.

Course Outcomes (Cos): The students should be able to:

- Understand system characteristics, project management, prototyping, and systems development life cycle phases.
- analyze a problem and design an appropriate solution using a combination of tools and techniques

UNIT I

Overview of system analysis and design: Systems concepts, Definition, Characteristics of a system, Elements of a system, Types of Systems: Physical or Abstract System. Open or Closed Systems. Man-Made Information Systems: Categories of Information, Formal Information Systems, Informal Information Systems.

UNIT II

System Development Life Cycle: Recognition of need, Feasibility study, Analysis, Design, Implementation, Post implementation and Maintenance, Project Termination, Prototyping, Role of the system Analyst: Definition, Skills, Academic and Personal Qualifications.

UNIT III

System Analysis: Systems Planning and the Initial Investigation- Initial Investigation: Needs Identification, Strategies for Determining Information Requirements, Problem Definition and Project Initiation.

Structured Analysis: Introduction, Tools of Structured Analysis: Dataflow Diagrams, DataDictionaries, Decision Tables, Decision Trees, Structured English.

Feasibility study: Introduction, Feasibility Considerations, Feasibility Study Stages, Feasibility Report, Cost/Benefit Analysis.

UNIT IV

System Design: The Process and Stages of System Design: Introduction, The Process of Design:Logical and Physical Design, Design Methodologies: Structured Design, Form-DrivenMethodology- The IPO Charts.

Input/Output and Forms Design: Introduction, Input Design, Output Design, Forms Design.

File Organization and Data Base Design: Introduction, File Structure, File Organization, Data Base Design, Views of Data.

UNIT V

System implementation, Post Implementation and Maintenance: Introduction, Testing objectives, Types of Testing, Quality Assurance: Quality Factors specifications, Levels of Quality Assurance, Post Implementationand Maintenance.

References

1. Elias M. Awad , System Analysis and Design, GALGOTIA Publications.
2. Joseph S. Valacich, Joey F. Grorger& Jeffrey A. Hoffer, Essentials of Systems Analysis and Design, 2004.
3. V. Rajaraman, Analysis and Design of Information Systems, III Edition, 2014.

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			THEORY			PRACTICAL		L	T	P	CREDITS
			End Sem University Exam	Two Term Exam	Teachers Assessment*	End Sem University Exam	Teachers Assessment*				
BCCA406	COMPULSORY	Lab-1 (Computer Graphics and Multimedia Lab)	--	--	--	30	20	0	0	6	3

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit; Q/A – Quiz/Assignment/Attendance, MST - Mid Sem Test.

***Teacher Assessment** shall be based on following components: Quiz/Assignment/Project/Participation in class (Given that no component shall be exceed 10 Marks)

Course Educational Objectives (CEOs):

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- To impart knowledge about drawing algorithms.
- To provide detailed knowledge about color and intensity levels.
- To acquaint students with windowing and clipping.
- To make the student understanding about Multimedia tools used in graphics.

Course Outcomes (Cos):

- An ability to understand basic knowledge of Computer Graphics.
- An ability to apply knowledge of Computer Graphics.
- An ability to understand the color and intensity levels.
- An ability to identify visible area of any surface.
- An ability to understand Multimedia.

List of Practical

1. Write a program for generating line using DDA algorithm.
2. Write a program for generating line using Bresenham's algorithm.
3. Write a program for generatingcircle using DDA algorithm.
4. Write a program for generatingcircle using Bresenham's algorithm.
5. Write a program for Cohen Sutherland line clipping algorithm.
6. Write a program for polygon clipping.
7. Write a program to draw mid-point circle algorithm.
8. Write a program to draw a Bezier curve.
9. Write a program to draw a Bezier surface.

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Reference Books:

1. Rogers, D. F. “Procedural Elements for computer graphics”. McGraw Hill.
2. Hearn, D. and Baker,M. “Computer Graphics” PHI.
3. Asthana, R. G. S. and Sinha, N. K. “Computer Graphics”, New Age International.

References

1. Elias M. Awad , System Analysis and Design, GALGOTIA Publications.
2. Joseph S. Valacich, Joey F. Grorger& Jeffrey A. Hoffer, Essentials of Systems Analysis and Design, 2004.
3. V. Rajaraman, Analysis and Design of Information Systems, III Edition, 2014.

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			THEORY			PRACTICAL		L	T	P	CREDITS
			End Sem University Exam	Two Term Exam	Teachers Assessment*	End Sem University Exam	Teachers Assessment*				
BCCA407	Com-pulso-ry	Lab-2 (System Analysis & Design Lab)	0	0	0	30	20	0	0	4	2

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit; Q/A – Quiz/Assignment/Attendance, MST - Mid Sem Test.

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Course Educational Objectives (CEOs):

- To introduce established and evolving methodologies for the analysis, design,and development of an information system.

Course Outcomes (Cos): The students should be able to:

- Understand system characteristics, project management, prototyping, and systems development life cycle phases.
- analyze a problem and design an appropriate solution using a combination of tools and techniques

Knowledge and understanding

1. Explain the principles, methods and techniques of systems development
2. Elaborate on the application areas for different types of methods
3. Explain the problems relating to systems development
4. Describe the differences between turn-key systems and systems developed by the organization
5. Describe the various stages of a phased systems analysis method
6. Explain, from a system theoretical viewpoint, how systems development is perceived
7. Discuss principles, methods and techniques for systems development with persons without specialized knowledge in this area

Skills and abilities

1. Use a phased system development methodology to implement a systems development project
2. Collaborate with other students to jointly implement a systems development project
3. Analyze and model organizational work

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4. Identify and describe different types of objectives for businesses and organizations
5. Analyze and describe processes
6. Describe a complete, new system in terms of processes and data structures

Values and perspectives

1. Show an understanding of how the values a system development methodology is based on can affect the resulting system
2. Demonstrate an understanding of the uncertainties that different users may have when it comes to introducing a new information system in an organization
3. Critically reflect on the completed system development project